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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/524,315

02/09/2005

Bernard A. McNulty

03-497

6460

34704 7590 06/08/2009

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EXAMINER

WEIER, ANTHONY J

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

06/08/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/524,315	Applicant(s) MCNULTY, BERNARD A.	
	Examiner Anthony Weier	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 17-24 is/are rejected.
- 7) ☒ Claim(s) 13-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 7, 8, 11, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by WO 01/33978 (Lanier et al).

Lanier et al discloses an apparatus for heat treating a biomaterial using at least one cylindrical microwave cavity wherein same is shown for heating packaged liquid material and, therefore, would be capable of treating inshell egg (see Figures 1a, 2b, 2c; page 8, lines 3-18; page 11, line 25 – page 12, line 2). In addition, Lanier et al discloses the use of conveyors to transport material through the microwave cavities (page 13, line 26 – page 14, line 9). Lanier et al further discloses the cavity being positioned longitudinally (i.e. cylindrical) wherein said cavity has a length which is inherently less than countless diameter values (see Figures 1a, 1b).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6, 9, and 17-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/33978 (Lanier et al) taken together with Davidson (U.S. Patent No. 6632464).

Lanier et al discloses an apparatus and method for heat treating a biomaterial using, for example, two separate cylindrical microwave cavities each having different heating capabilities (see Figures 1a, 1b; page 8, lines 3-18; page 11, line 25 – page 12, line 2). Examples of such heating capabilities including concentrated heating in the center of the biomaterial or in other selected areas of same (e.g. TM and TE modes; see page 12, lines 3-24). In addition, Lanier et al discloses the use of conveyors to transport material through the microwave cavities (page 13, line 26 – page 14, line 9) and microwave cavities comprising endwalls with apertures (see Figs. 1a and 1b).

Although Lanier et al discloses the treatment of egg (e.g. page 10, line 2) but is silent regarding the treatment of inshell egg, Lanier et al also discloses treatment of packaged food material for the purpose of pasteurization (e.g. page 7, line 27 - page 8, line 2). Clearly, inshell egg is a naturally packaged food material, and it would have been obvious to one having ordinary skill in the art at the time of the invention to have applied the teachings of Lanier et al to inshell egg as same is a form of packaged food.

Although providing the alternatives of treating the biomaterial in different manners, Lanier et al does not specifically articulate the combination of TM and TE modes in said consecutive microwave cavities. However, absent a showing of unexpected results, it would have been obvious to one having ordinary skill in the art at

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the time of the invention to have employed differing consecutive microwave heating modes as a matter of preference depending on the particular areas of the food desired for heating. With regard to the treatment of inshell egg, in particular, as required in the method claims, it has long been known that the yolk and egg white of the inshell egg require different heating treatments to provide a desired microbial kill without coagulating either the yolk or the egg white as taught, for example, in Davidson. In addition, Davidson teaches that eggs may be pasteurized by a variety of heating means including by microwave (col. 6, lines 2-37). One skilled in the art recognizing the difficulty in pasteurizing to a particular degree both yolk and egg white still in the shell as taught, for example, by Davidson would also recognize, therefore, that microwave treatment may generally be employed for such treatment. Lanier et al provides further direction as to how one might heat different select areas of food articles (page 12, lines 3-24). Since egg yolk and egg white occupy distinct areas within the shell of an egg, one skilled in the art at the time of the invention would turn to the direction of Lanier et al for providing separate heat treatments of the different parts of the egg to achieve the particular degree of pasteurization without the onset of coagulation in a manner which does not require the messier hot water treatment and limited temperature/time range used in Davidson.

The claims further call for the particular form of waveguide used and the apertures of the cavity endwalls are centrally located. However, such determination would have been well within the purview of a skilled artisan, and it would have been further obvious to have arrived at the particular waveguides as a matter of preference

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depending on the particular apparatus readily available and/or cost considerations. As for the position of the apertures, it would have been further obvious to have arrived at such location through routine experimental optimization.

The claims further call for the attainment of a particular level of microbial kill in at least one of the yolk or egg white as well as the particular temperatures employed with respect to both the yolk and egg white. Such determinations would have been well within the purview of a skilled artisan, and it would have been further obvious to have arrived at same through routine experimental optimization.

The claims further call for rotating or spinning the inshell eggs. It is notoriously well known to rotate food articles during microwave heating to provide more uniform heating. It would have been further obvious to have employed such well known feature in the process/apparatus of Lanier et al for such advantage.

The claims further call for adjusting the parameters of at least one of the microwave heating steps based on measuring the masses of the yolk and albumen in the eggs. However, the such processing is notoriously well known in the engineering art, particularly when the process is to be conducted continuously. By measuring the weight of the yolk and albumen, the appropriate amount of heating may be achieved such that the heating of all of the eggs treated is uniform. It would have been further obvious to have included such well known feedback information in the process of Lanier et al such that the same relative treatment (in the instant case, pasteurization) is conducted for each egg product passing through.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO

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01/33978 (Lanier et al) taken together with Davidson (U.S. Patent No. 6632464) and Cox et al (U.S. Patent No. 5939118).

Lanier et al further discloses additional pre-treatment steps in conjunction with said microwaving steps wherein said additional steps include heating by conduction which would necessarily include apparatus that achieves same (e.g. page 15, lines 15-24). The claims further call for the presence of a cryogenic chiller. It is well known to cool eggs following pasteurization as taught, for example, by Cox et al (col. 13, line 65 - col. 14, line 12), and it would have been obvious to one having ordinary skill in the art at the time of the invention to have incorporated such cooling step to ensure that any remaining viable harmful bacteria are not allowed to multiply. Although Cox et al is silent regarding the use of a cryogenic chiller to facilitate such cooling, such device is notoriously well known, and it would have been further obvious to have incorporated same as a matter of preference depending on, for example, the particular degree of cooling desired, the cost of cooling equipment, and the cooling equipment which is readily available.

Allowable Subject Matter

6. Claims 13-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record neither discloses nor teaches an apparatus having a microwave heating device as called for in the instant claims wherein same also

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includes a device or the ability to *preferentially* precool albumen below a pre-cool temperature of yolk within an egg.

Applicant's Arguments

7. Applicant's arguments filed 3/5/09 have been fully considered but they are not persuasive except for the rejections of claims under Skubich and Tran and the rejection of claims under 35 USC 112. Skubich does not appear to disclose the capability of the microwave device therein to facilitate differential heating within the treated food, particularly since Skubich is concerned with providing uniform heat treatment throughout the food (e.g. col. 3, lines 30-33). Likewise, Tran does not appear to disclose such differential targeted heating within a treated food as called for in the instant claims.

Applicant argues that the eggs and the differential yoke/albumen heating as set forth in claim 7 have not been addressed in view of Lanier et al. For the instant method claims, Davidson is brought in for support as set forth in the rejection above. As for the instant claims drawn to an apparatus, and it is not required that prior art specifically recite the presence of eggs and heating steps but that same would reasonably be capable of treating eggs to provide conditions claimed. It should be first noted that there is nothing in Lanier et al to suggest that same would not be able to convey inshell egg or that egg shell contents would not be subjected to microwave heating while passing threw the microwave cavity. Since Lanier et al discloses the use of the apparatus set forth therein for microwave heating of a contained biomaterial (foods such as meat paste) conveyed through a microwave cavity, it is reasonable to expect that same would be capable of conveying inshell eggs (a biomaterial contained within a

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shell) for heat treatment through a microwave cavity. Page 12 of Lanier et al discloses the microwave apparatus employed therein having the ability to manipulate microwave energy to effect "various spatially and temporally selective temperature distributions in food and biomaterial treatments such as selective component treatments" of spatial components of composition products. The yolk and albumen within the egg are spatial components within the shell. Most importantly, Lanier et al discloses heating in such manner that the center of the material is heated to a higher temperature than the outer concentric edge of the material (see page 12, lines 3-5). It is reasonable to conclude, therefore, that the Lanier et al apparatus would be able to provide the function of the claimed apparatus.

Applicant argues that it is not clear that Lanier et al provides a right circular cylindrical microwave cavity along the flow path. Page 8 of Lanier et al discloses effecting continuous flow in a variety of ways including through microwave cavities that are cylindrical in shape wherein same are able to support "treatment under continuous flow conditions [with] single and multi-mode, standing wave, and traveling wave configurations." In other words, Lanier et al encompasses a wide range of wave configurations in conjunction with cylindrical microwave reactors which would naturally include that set forth in the instant claims.

Applicant argues that there was no application of 35 USC 112, 6th paragraph regarding claim 12. Since the claim limitation did not employ the term "means for" but rather a different format (i.e. "means along the flow path for microwave heating"), 35 USC 112, 6th paragraph was not invoked. As such, this limitation is interpreted as

reading on any prior art means which performs the function specified in the claim.

Applicant argues that it is not clear as to the reference to TM and TE modes in Lanier et al. Lanier et al does not expressly articulate an apparatus employing TE and TM modes. However, Lanier et al does disclose the apparatus therein facilitating treatments which would naturally provide or be required to employ such modes (see page 12, lines 3-24).

Applicant argues that it is not substantiated that Lanier et al discloses microwave cavities comprising endwalls with apertures. However, this can be seen, for example, in Figure 1a which has two endwalls with openings in each (vicinity of the arrow).

Applicant argues that the reference to the inshell egg as the naturally packaged food material in Lanier et al is unreasonable. Examiner disagrees. The entire egg itself is natural and not man-made. Moreover, the egg also comes equipped with its own packaging, a naturally produced shell.

Applicant questions whether or not that the thermal gelation called for in Lanier et al would essentially cook the eggs contrary to what is called for in instant claim 22. However, it is asserted that the apparatus of Lanier et al may function to employ a wide variety of temperatures by microwave heating and that same would, therefore, be capable of providing a treated egg that has not been heated to such degree as to cause coagulation. Although it is true that Lanier et al does make reference to treatment of eggs and that treatment of same may result in coagulation, it should also be noted Lanier et al specifically sets forth that the invention therein is not limited to same (see paragraph bridging pages 6 and 7). Moreover, Lanier et al specifically sets forth that

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the invention is not limited to forming gels or coagulating material but also relates to its use in pasteurizing foods (see col. 6, lines 12-20).

Applicant questions why Davidson was not applied as the primary reference and that no basis is established for many of the assertions set forth with respect to modifying Lanier et al. Again, many of the instant claims are all drawn to apparatus claims and Lanier et al provides substantially, if not all of the limitations as called for in the instant claims. Davidson was brought in to tie the invention of Lanier et al to microwave treatment of inshell eggs as called for in the method claims. Davidson illustrates the known importance of differing heat treatments of albumen and yolk in eggs to provide a desired microbial kill without coagulating same. Lanier et al does provide the means for heating food material with spatially related components at different temperatures (page 12, lines 3-15). The problem identified by Davidson which contemplates treatment by microwave heating is answered by the device of Lanier et al which provides the solution of heating the center of the treated material to a higher degree wherein the overall device of Lanier et al may be used to pasteurize a food material, precisely the concern of Davidson.

Applicant argues that no basis is provided for arriving at the particular cavity geometry, etc. Absent a showing of unexpected results, one skilled in the art of microwave heating would have knowledge of cavity geometry, waveguides, etc. and how same performs in heat treating foods in general.

Applicant argues that the assertions regarding level of microbial kill and temperatures has no basis. The relationship of temperature to microbial kill is

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notoriously well known. Thus, knowing that microwaves may be used to facilitate temperature change, it would have been obvious to have attained the particular temperatures required to facilitate the particular kill level desired by optimizing the microwave treatment of same. As discussed above, Lanier et al further discloses the use of the device therein for pasteurizing and, thus, microbial killing. One skilled in the art, knowing that microbial kill may be tied to temperature and that microwaves may be used to induce heating, it would have been obvious to one having ordinary skill in the art at the time of the invention to have arrived at the particular level of microbial kill and the temperature/time required to achieve same through routine experimental optimization.

Applicant argues that no motivation is provided for combining rotation with the microwave treatment of eggs. Clearly, it is notoriously well known to rotate foods during microwave heating to provide more uniform heating. If it is desired to provide uniform heating in the end egg product, it would have been obvious to one having ordinary skill in the art to have implemented the step of rotation to achieve same.

Applicant argues that there is no motivation provided for employing cryogenic chilling with eggs. It is known to cool eggs (as taught by Cox et al, for example). Cryogenic chilling is also well known. Absent a showing of unexpected results, it would have been further obvious to have employed cryogenic chilling as a known alternative for cooling material including eggs.

All other arguments have been addressed in view of the rejections as set forth above.

Conclusion

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8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Weier whose telephone number is 571-272-1409. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Anthony Weier
June 3, 2009